

The Saturday Gazette.

BLOOMFIELD AND MONTCLAIR.

WILLIAM P. LYON, Editor and Proprietor.
CHARLES M. DAVIS, Associate Editor.

OFFICE,
Bloomfield, N. J.

AN INDEPENDENT WEEKLY JOURNAL OF LITERATURE, EDUCATION, GENERAL NEWS AND LOCAL INTERESTS. \$2.00 A YEAR IN ADVANCE.

VOL. III.—NO. 19.

Saturday, May 9, 1874.

Single Copies, 5 Cents

THE
SATURDAY GAZETTE,
BLOOMFIELD AND MONTCLAIR.

AN INDEPENDENT WEEKLY JOURNAL
OF LITERATURE,

EDUCATION,
POLITICS,
GENERAL NEWS,
AND LOCAL INTERESTS.

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Same as our New Boot.

April 18—

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THIS institution commenced business on the 24th of February last, in the Rhode Island building, No. 445 Broad Street, nearly opposite the M. & E. R. R. Depot. It is very conveniently located for residents of Bloomfield, Montclair and vicinity who may desire to have banking facilities in Newark.

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Mar. 1-17

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may 31-17

PEOPLES Savings Institution,

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APRIL 15th, 1874.

At a meeting of the Board of Managers held this day, a dividend at the rate of 7 PER CENT. PER ANNUM FREE OF ALL TAXES

was declared on all deposits entitled thereto on the first of May, payable on and after May 15th.

Interest not drawn will be credited as principal from May 1st. Deposits made on or before May 2d, will draw interest from May 1st.

This institution will remove on or about April 25th to its new Banking room, number 448 Broad St., under the Continental Hotel.

H. M. RHODES, President.

Wm. R. RANDALL, Treasurer.

LEGAL ADVERTISEMENTS.

SEALED PROPOSALS

Will be received by the subscriber, until 10 o'clock P. M., May 9, 1874, for the working and grading of Union St. Montclair, from Fullerton Ave., west, to Montclair Ave., about 6,000 cubic feet of dirt to be moved, according to plans and specifications to be seen at my residence in Montclair. The Town Committee of Montclair hereby reserve the right to reject any and all bids, as they may deem best for the interest of the Township.

Signed,
E. T. GOULD,
For the Town Committee of Montclair.

May 3

MASTER'S SALE.

IN CHANCERY OF NEW JERSEY.

Between Abram S. Hewitt, Complainant and Defendant, F. F. for sale of mortgaged premises.

The Sale under the above stated writ stands adjourned to Saturday, 24th May 1874, at Taylor's Hotel, in Jersey City, at 3 o'clock, P. M.

WILLIAM PATTERSON,
Master in Chancery of N. J.

may 8-17

COMMISSIONER'S SALE OF REAL ESTATE.

THE Subscribers, Commissioners appointed by the Circuit Court of Essex County by an order of said Court, made on the 24th day of March instant, will sell at Public Vendue to the highest bidder, on Tuesday the second day of June next, at two o'clock in the afternoon on the premises, all those tracts or parcels of land situated in Bloomfield, late of Henry J. Davis, deceased. The first tract, three lots situate on E. V. Street and are respectively seventy-five, sixty-five and forty feet wide and one hundred and five feet deep, on the other line, one lot on the easterly line of Hickory Street, fifty feet wide and about eighty-nine feet deep, also two alleys adjoining of ten feet wide, one lot on the west side of Hickory Street about fifty feet wide and about eighty-nine feet deep, also one lot on the easterly side of the town, path of the Morris Canal and running northerly about five hundred and four feet to land of Michael Elmer, easterly along his line about seventy-two feet to Hickory Street, southerly along the same sixty-five feet to Vine Alley, thence southerly along the same two hundred and thirty-two feet to land now or formerly of D. C. Hayes, thence westerly along the same directly west to the said low-path and place of beginning.

Dated Bloomfield May 14th, 1874.

WILLIAM R. HALL,
HORACE PIERSON,
SMITH & PERRY,
Commissioners.

GUARDIAN SALE.

IN CHANCERY OF NEW JERSEY.—In the matter of the Estate of Robert M. Benning, Guardian of Alfred E. De Lave, a Lunatic, for the sale of Real Estate—an order for sale.

The sale of property in the above stated matter, is adjourned until

the same hour on the tract of land first described in the advertisement thereof, bought of William Green by deed recorded in Book L. 12, of Deeds for Essex County, on page 173.

R. M. BENNING,
Guardian.

April 9, 1874

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May 3-18um

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oct 18

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feb 22-17

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Educational

For Saturday Gazette.

SPECTRUM ANALYSIS.

The words Spectrum Analysis have so learned a sound that most persons would at once conclude that the subject was only to be understood by scientific people, and pass them by as not suited to the general reader, but this discovery of the present generation has so enlarged our knowledge of the universe that a plain description of what it is, will be read with pleasure by every one not only for its novelty, but for the marvelous results that have been reached with the simplest instruments. This wonders that it has shown to our sense of sight about regions of space at enormous distances from our earth are the results of the labors of patient and devoted thinkers, dwelling upon a few well-known facts of nature, the magician's wand that has ranged in order before our eyes, the constituent elements of the sun and even swept the fixed stars within our knowledge is a simple piece of glass shaped like a three-cornered file, the prism. The view of Light, now accepted, is that an ether pervades all space between the various planets and stars, like the air that we live in, but vastly more rarified and subtle.

At all events, it moves in undulations or waves as any other gas does, and these waves cause vision, when they strike upon the eye, as in other cases waves of air striking the ear produce sound. As waves of sound of diverse lengths produce diverse sounds, so do those of light diverse colors.

The prism enables us to separate the waves moving with the same velocity which are of different lengths. Those having the shortest wave length, on meeting the resistance of the glass of the prism are turned aside from their direct course more than the longer ones. To try this, let a beam of light into a dark room through a hole of 1-8 inch diameter and let this beam pass through the prism. The enchanter delays it and releases it no longer a simple ray of pure white light but disclosing that its substance held concealed a series of beauties that as they struggle to escape show a successive sash of red, orange, yellow, green, blue and violet, beyond which some subtle ones escape invisible. These, the actinic rays, are those that photography captures and which average themselves on unwary men in sun strokes. The violet ray that appears at one end of the spectrum, as the divided ray of light is called moves with 800 billions of vibrations in one second, the red ray with 450 billions, and the others with velocities between these two. The lovely violet that often clothes the earth at sunset moves with nearly twice the activity of the massive red rays. We cannot divide up any one of these colored rays by passing it alone through another prism, and these are therefore considered to be primitive colors. Yet, as the range of vibrations is unlimited, there may be colors which our sense of sight is not capable of perceiving.

Having now a key which unlocks the treasures of color, before using it further let us examine the cause of color in the objects around us, a step that will impressably bring us near to the key to the sun's elementary constituents by a path so indirect that its ending is more wonderful than a fairy tale.

Are colors a something inherent in the nature of every substance? A dress that is violet by daylight becomes dull by gas light; or if you mix a little table salt in the wick of a spirit lamp you will find it gives a yellow flame that makes all objects around it seem gray or only dull light and shade. Now remembering the effect the prism had in disposing the white ray of sun light and supposing that all objects have the same effect to a certain degree only, then a cause for their colors may be imagined. For if any body has the power of separating the white light into its various colored rays and also of absorbing all except one, which it reflects, it will of course appear to the eye of that color; and still further, if it absorbs all the other colors and reflects only one, it will appear black to us when lighted by a flame that does not have that color in it, since it absorbs all other colors and its proper color is not in the flame to be reflected. Try this by taking a piece of blue paper into a dark room and lighting it by the sodium flame of a spirit lamp fixed as mentioned previously. The yellow flame can throw no blue rays upon the paper, and it will appear black. A red paper will not seem quite black as it only partially absorbs the yellow rays. We have now reached a fact that is of importance in what follows, which is, that a colored body shows black when lighted by a flame of the color which the body absorbs. As the point to which we wish to reach is the matter which is to be found in the sun, and which is in the condition of a gas, we will pass by the consideration of absorption by solids and liquids to examine how it affects gases both when they are luminous and non-luminous. A simple instrument

to hold the gases is a glass globe or a vessel which has those parts through which the ray of light is to pass parallel and also perpendicular to the ray, and iodine a convenient body to experiment with. A little piece of this will give a beautiful violet vapor with moderate heating of the glass that holds it. By placing a prism close to the glass and then throwing a beam of light through it and looking at the spectrum which is made by it, between the yellow and blue there will appear a dark belt, and any intense light, such as the electric, resolves this into a number of dark lines, showing that certain rays of light are absorbed in passing through the vapor of the iodine. Most other colored vapors also cause similar dark lines to appear on the spectrum, though some do not. This power of bodies to absorb light and their power of emitting it, when heated are similar to their known power to absorb and emit heat, of which those bodies that absorb the most have long been known to emit the most.

In 1860, Kirchhoff collected all previous observations on this subject and announced a law from which it is, that the power of emission of rays compared to that of absorption is the same for all bodies at the same temperature. Here is a law to which all light is subject whether it reaches us from the sun or has been on its journey from the fixed stars since before the deluge. Unity of force and the reign of Law are spread before us, and with them we can test the operations of the visible universe.

We will now examine the spectrum made by the sun more carefully and use instead of one prism a collection of from four to nine, in order to extend the spectrum. This instrument being used with the telescope and the microscope must have a name suited for such scientific study and is introduced as the Spectroscope.

The sun's spectrum when passed through this instrument shows not only the colors that are seen by means of one prism, but in addition a number of black lines, which always keep the same position and relative order. One thousand of these lines have been mapped by the use of elaborate instruments and the spectrum sub-divided into spaces marked with letters for reference. Fraunhofer, who mapped six hundred of these, observed that two of them, which he marked D, occupied the same space in the spectrum as did the two bright lines made by sodium. Kirchhoff first, obtaining a solar spectrum and then bringing a sodium flame in front of the slit so that the sun's ray passed through the sodium vapor saw that these D lines became bright by light emitted from the sodium. Next showing the gas light of a Bunsen burner through the sodium, the yellow lines were still emitted, but the direct rays of the sun as also the light of the Drummond were both absorbed by the sodium and the dark spaces showed in the spectrum.

From such an evident connexion between the sodium lines and the D lines of the sun, he proceeded to divide the spectrum so that whilst one half would show the sun's lines the other half would show the lines of any metallic or other vapor by the side of the sun's black lines, in the same way that two sheets of ruled paper may be laid side by side to try whether the lines agree. In this way more than sixty lines made by iron were found to coincide exactly with as many lines in the sun's spectrum, and as the chances that this was accidental were one in many billions, it was announced that the elements of our earth composed the sun. That a German professor armed with a piece of glass should summon the sun 95 millions of miles distant to give an account of its constituents seemed rather the work of spiritual agencies than of earthly ones. Daring and ingenious man, striving to reach the heavens and not resting in the sun, pursued a career in boundless space, questioning the planets and fixed stars and finally determining the qualities of the nebulae which had baffled the gigantic instruments of Herschel and Lord Rosse.

But whilst so part of the visible universe has been left unexamined, the greatest interest has centered in new discoveries in the sun, and the material of which it is composed forms but a small part of the knowledge now acquired of its atmosphere, its daily changes, and of its tremendous hurricanes, even the velocity of which, as well as their extent, are known, and whether they are advancing or receding from us.

The first theory of the condition of things on its surface was that a central mass of intense temperature, composed of all the various minerals, was surrounded by vapors of the same substances of lower temperature and that these absorbed each its special ray, so that the light as it reached us showed the various black lines in the spectrum due to this cause; and so confirm or contradict this a total eclipse which shot off the direct light of the central mass; and thus all in the vapors only, of the sun to be examined, was looked forward to with such interest that national expeditions were sent to various parts of the earth

where an eclipse was total, to make the required observations. One astronomer who was shut up in Paris by the Germans, soared away with his apparatus in a balloon, to keep his engagement with the sun. What wild Eastern tale of a magician rising in his fiery chariot ever equalled this. But the acute minds of explorers have now devised several ways of separating the sun's direct rays from those of the exterior or chromosphere. The most successful method is that of extending the spectrum and thus weakening its light, until a point is reached where the stronger light of the chromosphere is alone visible. The patient observer, sitting in his room, can now observe the incessant changes that the sun's vapors are undergoing. It may be that unusual movements indicate the commencement of a Hydrogen hurricane, and as he gazes, a column of violet flame shoots up to a height of 70,000 miles, with a volume of gas so enormous that our earth would be tossed upon it like a boat on a wave of the ocean. Sometimes these outbursts of flame spread and widen at the top to the form of mushrooms, or the majestic and mighty volume may slowly disappear, as if the first effort had exhausted the internal force which projected it upward into space. These storms recede and advance, they are of various forms and dimensions, and their fiery tongues of flame, wave, as if the internal strife that agitates them, was of force too vast and too intense for our conception. It is difficult to foresee what may be the future knowledge obtained by students in this absorbing pursuit, and it is with the hope that some may be stimulated to apply themselves to it that this sketch is written.

Montclair, April 18, 1874.

AN APPEAL TO CHRISTIANS, INDIVIDUALLY AND COLLECTIVELY, IN BEHALF OF THE CAUSE OF PEACE.

It is well known to our Christian brethren that the Religious Society of Friends has ever believed that all war is entirely forbidden by the Gospel, and that, in accordance with that belief, its members have, as a rule, refused to take any part in carnal warfare; and for refusing to comply with military requisitions, or to pay fines for thus refusing, many, in years past, have suffered distraint of goods to large amounts, and not a few have been imprisoned. Beside a passive testimony thus borne by members individually, the Society have, from time to time, issued its public protest against this heathen and wicked custom.

But while we have cause to feel thankful for the amelioration of military laws, whereby our members are now generally exempt from suffering, we are pained in knowing that war, with all its horrors, is yet allowed and practiced by all the Christian nations, and sanctioned by the larger portions of the Christian Church. As Christians, we all believe in the fulfillment of prophecy. Dr. Chalmers, more than fifty years ago, testified that "The mere existence of this prophecy of peace is a sentence of condemnation upon war, and stamps a criminality on its very forehead. So soon as Christianity shall gain a full ascendancy in the world, from that moment war is to disappear."

Believing that it is only by a full and proper application of the Gospel in the affairs of nations, as well as individuals, that the prophecies in regard to war will be fulfilled; and believing, as a branch of the Church which has so long seen the true character of this heathen abomination, that we are not doing all that we should do toward enlightening our brethren in this important subject, most of the Yearly Meetings of Friends have united in the organization of "The Peace Association of Friends in America," to which is delegated this important work, with instructions to labor expressly on their behalf in the more general promotion of the cause of Peace.

The Association, in the fulfillment of its trust, has thus far mostly confined its labors to the printing and circulation of books and tracts, and the publication of a monthly paper called the "Messenger of Peace." During the few years of its existence, millions of pages have been distributed far and wide, and many acknowledgments have been received of the convincing effects of the truth therein inclosed.

The attitude of millions in the prime of manhood, now kept constantly armed and equipped for mutual slaughter by the nations of Europe, and the sudden uprising of the war spirit in our midst, convince us of the necessity of further and more direct efforts to arouse and awaken the public to a clearer appreciation of the true character of this monstrous evil. It is only by the full application of the Gospel that war can be abolished, surely it is the duty of the Church to labor for its proper application.

But, in view of the apathy that so generally prevails, we feel constrained to appeal directly to our Christian brethren, individually and collectively, earnestly entreating them to take the subject into their personal consideration in all its bearings. Can we believe that if the members of the Christian Church everywhere were entirely to refrain from taking part in carnal warfare, that professedly Christian nations could any longer continue the custom? If we believe this, we must also believe that the responsibility for the continuance of war rests upon the Church. Dear fellow-professors, can you rest satisfied in continuing to bear the weight of this awful responsibility?

While statesmen and publicists are laboring to relieve suffering humanity from the blights of this dreadful curse, the Church of Christ remains silent. Surely it is time to rise from its slumber, and to

proclaim its supremacy! Is not eighteen hundred years long enough for its white robes, which should be pure and spotless, to have been stained in blood? Must the skirts of the visible Church be longer polluted with the gore of the battle-field, and stained with the tears of the orphan, and the widow? While war, as has been said, seems to him at setting up the Kingdom of Satan in the earth, alas! the Church remains to its very bulwark!

Surely it is time to wipe out this reproach against Him, at whose coming into the world, Peace on earth and good will to men was proclaimed, and engage in this holy warfare against the supremacy of Satan's Kingdom.